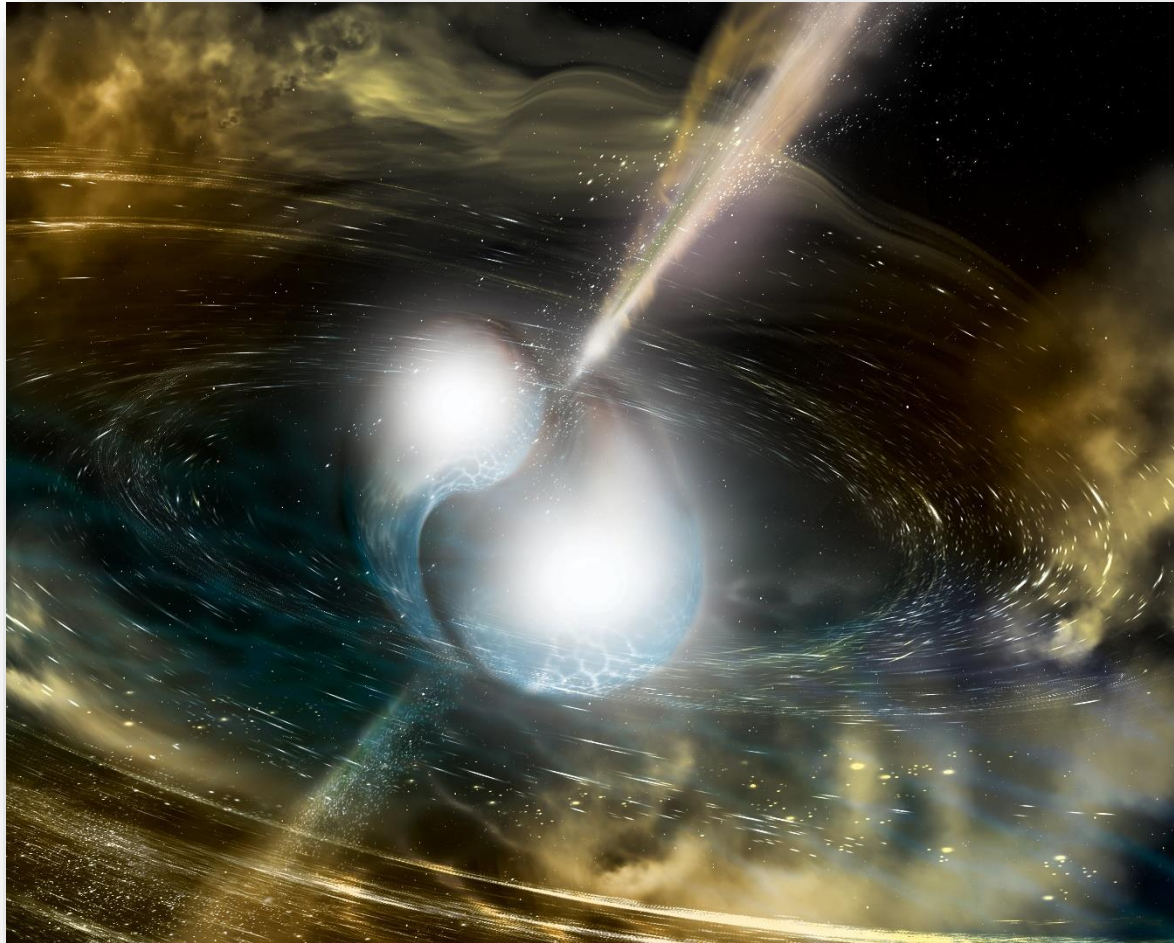
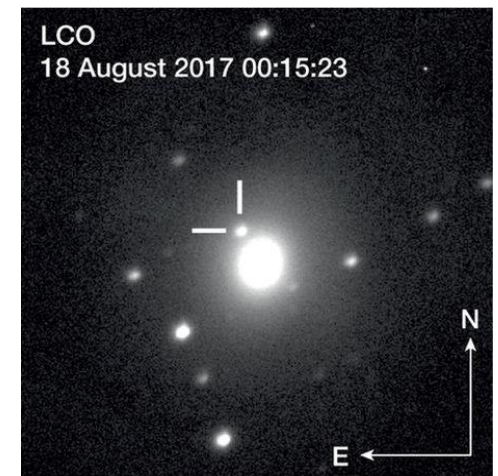


Multimessenger Astrophysics Science Analysis Group



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- August BNS merger discovery demonstrated power of MMA
 - Gamma-rays detected by *Fermi*
 - Gravitational waves detected by LIGO/Virgo
 - Flurry of follow-up observations by international astronomical community
 - What we learned:
 - BNS mergers occur in nature
 - Short GRB associated with at least fraction of BNS mergers
 - Kilonovae connected to BNS mergers
 - Gravitational waves and light travel at the same speed to 10^{-15} ...



- NASA observatories in 2020 decade and beyond will have an important role to play in future MMA observations, including:
 - those that continue to operate in the 2020s (*Hubble, Chandra, Swift, Fermi*)
 - those currently planned (JWST, WFIRST, Athena, LISA, and Explorers)
 - those that will be considered by the 2020 astrophysics decadal committee
- Many scientific communities within PCOS are now preparing for the 2020 decadal survey
- MMA SAG will analyze scientific benefits of MMA observations made possible by NASA observatories in 2020's and beyond
 - NASA observatories working in conjunction with each other or with other ground and/or space-based instruments

Goals of the MMA SAG

1. Identify science goals achieved by combining different messengers measured by current/future ground/space observatories
2. Identify measurements that can be made by existing, currently approved, and future ground- and space-based observatories that could contribute to MMA in 2020's and early 2030's
3. Determine how these science goals align with NASA Astrophysics scientific priorities
4. Identify key qualitative technical drivers needed to achieve these goals (e.g. wavelength, sensitivity, sky localization, latency, ...)
 - If feasible, determine desirable performance levels for each

What is the MMA SAG?

- Community-driven; community-owned
- MMA SAG will consist of astrophysicists from multiple (all?) disciplines within the PhysPAG
- COPAG will participate
- While inspired by GW BNS observation, MMA SAG is not necessarily GW-specific
- SAG is made up of anyone from the community who is interested
- Steering committee made up of one member from each participating community
 - e.g. GW, cosmic rays, Gamma Rays, X-Ray, ...
 - Will drive the science analysis, community involvement, white paper writing

MMA SAG Steering Committee

- **MMA SAG Steering Committee:**
 - Sarah Burke Spolaor, West Virginia University
 - Peter Shawhan, University of Maryland
 - Dieter Hartmann, Naval Research Laboratory
 - Erin Kara, University of Maryland
 - Nathan Whitehorn, UCLA
 - Scott Wakely, University of Chicago
 - Suvi Gezari (COPAG rep), University of Maryland
- **Ex officio members:**
 - John Conklin, PhysPAG EC Chair, University of Florida
 - Terri Brandt, PCOS Acting Chef Scientist, NASA GSFC



Outcomes of the MMA SAG

- Timing of MMA SAG designed to be commensurate with 2020 decadal process
- The SAG will document its analysis in one or more publically available white papers
 - Delivered to NASA Astrophysics Advisory Committee in mid-2019 (TBC)

Status of the MMA SAG

- Steering committee selected
- MMA SAG approved by NASA Astrophysics Advisory Committee on 11 April 2018
- Kick-off telecon for steering committee to be held next week.
 - Main purpose:
 - To get organized
 - To determine avenues for broad community engagement

How to get involved

- Steering committee to determine pathways to the community
 - So stay tuned
- For now, if interested
 - Email me: jwconklin@ufl.edu
 - Join PCOS email list: Google pcos email list

